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Revolutionizing Health Education in Tanzania: Integrating One Health into existing Curricula

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Background

In Tanzania, the rising threats of emerging and re-emerging pandemics have highlighted the urgent need for a workforce equipped to address complex health challenges at the intersection of human, animal, and environmental health. Compounding this challenge is the shortage of adequately trained health professionals, leaving the country vulnerable to public health crises.

Recognizing these pressing issues, the transformation of One Health (OH) education in Tanzania began in 2016 under the leadership of One Health Central and Eastern Africa (OHCEA), the predecessor of the Africa One Health University Network (AFROHUN). Supported by USAID, OHCEA developed 17 technical and soft skill competencies designed to build a multidisciplinary workforce. These competencies integrated human and animal health sciences with principles of infectious disease response, outbreak management, ecology, and environmental sciences to equip learners with the skills necessary to address cross-disciplinary health risks and work collaboratively in multidisciplinary teams.

This initiative, in collaboration with Muhimbili University of Health and Allied Sciences (MUHAS) and Sokoine University of Agriculture (SUA), adapted the competencies into 14 core modules better suited for Tanzania's educational system. These modules were piloted with undergraduate students, marking a significant step toward building a workforce capable of responding to health threats and ensuring sustainable health outcomes.

Two-Stage Journey of One Health Integration in Tanzania

Stage 1: Transforming Health Education at Universities

In the initial phase, OHCEA piloted One Health modules at MUHAS and SUA, targeting undergraduate students through engaging evening classes. These sessions covered topics such as Emerging Pandemic Threats, Antimicrobial Resistance (AMR), disaster preparedness, food hygiene, and communicable disease surveillance. The innovative approach of combining two-hour lectures with refreshments drew overwhelming interest from students both at MUHAS and SUA.

The pilot's success prompted the refinement of the modules into 30-hour topics, which were integrated into the regular curricula by 2018. At MUHAS, the modules became part of the Communicable Disease Control program and included experiential learning components, such as fieldwork and proposal development. At SUA, the modules were embedded in postgraduate public health programs, equipping students with practical knowledge to address real-world challenges. Faculty members participated in workshops to develop standardized training materials, ensuring sustainability and consistency in delivery.

This approach not only increased student engagement but also contributed to their academic performance, as the modules became examinable subjects. The success demonstrated the potential of integrating OH content into higher education, laying a strong foundation for scaling up the integration to other universities in Tanzania. All faculty who participated in the integration workshops were tasked with development of training materials to accompany the integrated curricula including power-point

presentations for use by any trainer during actual training. Routine teaching of OH at university level at both MUHAS and SUA officially began in 2018 in most undergraduate programs at MUHAS while the training was limited to the post-graduate programs of the School of Public Health and Social Sciences at MUHAS.

The impact was profound: students were engaged more actively, faculty standardized teaching materials became more readily available, and the foundation was set for scaling One Health education to other universities. On average, over 200 undergraduates and 100 postgraduates at MUHAS become One Health exposed alumni each year since 2018 while at SUA over 150 undergraduates and 15 post-graduates become OH exposed alumni each year.

OHCEA OneHealth WORKFORCE		OHCEA OneHealth WORKFORCE	
Technical and soft skills undertaken by MUHAS and SUA in Tanzania		Technical and soft skills undertaken by MUHAS and SUA in Tanzania	
TECHNICAL SKILLS	SOFT SKILLS	TECHNICAL SKILLS	SOFT SKILLS (CORE COMPETENCIES)
<ul style="list-style-type: none"> Epidemiology Ecosystem health Risk analysis Infectious Disease Management Outbreak Investigation and response One health concepts and knowledge Psycho social(mental) Health Research 	<ul style="list-style-type: none"> Management Communication and Informatics Leadership Behavior change Collaboration and partnership Systems thinking Culture, beliefs, values and ethics Gender and One Health Policy and Advocacy 	<ul style="list-style-type: none"> Emerging Pandemic Threats One health concepts and knowledge Outbreak Investigation and response (Early detection of epidemics) Surveillance of Communicable Diseases in human and animal populations Principles of Infectious Disease transmission Disaster preparedness and response Notifiable Communicable Diseases and Legislation (Reporting at national level, IHR and PVS) Ecosystem health Antimicrobial resistance Sanitation, food hygiene and One Health 	<ul style="list-style-type: none"> Leadership and management in One Health Systems thinking in One Health Gender and One Health Risk analysis, risk communication and management

Stage 2: Expanding One Health to Technical Colleges

Inspired by the successes registered at MUHAS and SUA, AFROHUN expanded OH education to diploma and certificate level programs. This second phase targeted technical colleges, whose graduates serve as first responders to health emergencies at the community level. These training levels do not offer degrees and therefore needed to have the university level integration content scaled down to align with their levels. These integration efforts began in 2018 and by 2022 most programs were integrated with OH content.

AFROHUN collaborated with sector ministries, college tutors, and the National Council for Technical Education (NACTE) to integrate OH competencies into diploma and certificate curricula. By 2022, over 70% of the technical



colleges in human health, animal health, environmental health, wildlife, and agriculture disciplines had adopted the integrated curricula. The following diploma and certificate programs have

integrated OH content into their curricula. However, except in two private colleges (Hermags Institute and Mweka Wildlife College), actual training has not officially started:

Integrated Programs:

1. Clinical Medicine
2. Nursing and Midwifery
3. Environmental Health
4. Medical Laboratory Science
5. Wildlife Management
6. Pharmacy
7. Livestock and Fisheries
8. Agricultural Production
9. Dental Health

A significant milestone was achieved during a 2020 training event in Morogoro, where 30 trained college tutors successfully demonstrated their ability to deliver the integrated curricula to over 270 diploma students. Feedback was overwhelmingly positive, with tutors effectively delivering the content and students enthusiastically embracing the practical, multidisciplinary approach. Flora Lucas, a tutor from Hermags Institute, shared her experience as follows:

“When I was trained by AFROHUN to teach my students about One Health, I was excited because the concept was entirely new to me. Soon after the training,

Flora Lucas
during a
teaching
session



I began teaching my 69 students about One Health concepts and practices. My college supported me, and I have been delivering this training every year since. Thank you, AFROHUN, for this opportunity!”

Impact and Successes

Enhanced Student Learning: Students gained practical skills and hands-on experience, improving academic performance and readiness for real-world challenges.

Scalability: The initiative established a replicable model for integrating OH into higher education and technical training institutions.

Increased Workforce Capacity: By equipping graduates with cross-disciplinary competencies, Tanzania will be better prepared to address public health crises especially when training becomes rolled up in public colleges.

Challenges and the road ahead

Despite formal endorsement of the integrated curricula by the National Council for Technical Education (NACTE) and sector ministries, resource constraints have delayed the printing and dissemination of these materials to colleges. Each ministry is expected to print and distribute the curricula to facilitate delivery. However, some institutions, such as Hermags Institute in Morogoro and Mweka Wildlife College in Kilimanjaro, have proactively started teaching integrated content without formalized materials.

While the integration process is complete, the coverage of tutor training to deliver the curricula remains limited. Addressing this gap is a priority for AFROHUN, which aims to expand tutor training to ensure consistent and high-quality delivery across all participating institutions. PowerPoint presentations on specific One Health topics and a hard copy of the lecture notes manual prepared by AFROHUN have been shared with trainers of trainers (TOTs) to facilitate teaching.

This transformative journey that began in 2016 has reshaped One Health education in Tanzania, paving the way for a stronger, multidisciplinary workforce capable of addressing the country's pressing health challenges. Through strategic partnerships, innovative pedagogy, and unwavering commitment, AFROHUN continues to demonstrate the power of One Health education to drive change and build a healthier future for Tanzania and beyond.

Conclusion

AFROHUN's journey to integrate One Health education at both university and technical college levels has transformed the landscape of health workforce training in Tanzania. By fostering

multidisciplinary collaboration and equipping graduates with essential competencies, AFROHUN is building a resilient workforce capable of addressing complex health challenges.

This success story stands as a testament to the power of partnerships, innovation, and commitment in driving educational transformation for a healthier Tanzania and beyond.

ABOUT AFROHUN

Africa One Health University Network (AFROHUN) is an international network, currently in 28 higher education institutions of public health, veterinary medicine, pathobiology, environmental sciences, medicine and global health, in 10 countries in Africa. The countries are *Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Ethiopia, Kenya, Liberia, Rwanda, Senegal, Tanzania and Uganda*. AROHUN is formerly OHCEA.

AFROHUN is working to transform the training environment and approaches in universities and allied institutions in Africa, to develop a One Health workforce: a workforce with no disciplinary boundaries. AFROHUN is building a workforce with competency to predict, detect and respond to the kind of complex health challenges we are witnessing today. To achieve this transformation, we are reviewing curricula, designing new and exciting experiential learning multidisciplinary training programs, re-tooling teachers and trainers, educating communities on existence and transmission of zoonotic and infectious diseases, while engaging national and sub-national governments to integrate One Health into national policy and strategic planning.

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